

PATENT SPECIFICATION

DRAWINGS ATTACHED

890,293



Date of Application and filing Complete Specification July 2, 1958.

No. 21210/58.

Two Applications made in France on Dec. 17, 1957.

Complete Specification Published Feb. 28, 1962.

Index at acceptance:—Classes 35, A1C3G, A2(C3: CX: E5: K3: Q); and 80(4), L.

International Classification:—H02k. F06m.

COMPLETE SPECIFICATION

Improved Alternator Having an External Magnetic Rotor

We, SOCIÉTÉ ANONYME NOVI, a Corporate Body, organized under the laws of France, of 12, Chemin des Vignes, Pantin (Seine), France, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to an alternator having an external magnetic rotor.

In some known alternators a rotating inductor is arranged centrally of the apparatus and revolves within a surrounding stationary armature on which output windings are carried. Similarly it is known to provide the reverse arrangement, wherein a rotating inductor is positioned externally, while a stationary armature is positioned internally.

According to the invention there is provided an alternator which comprises a fixed shaft supported by at least one of its extremities, a fixed armature on the shaft, and an external rotor which entirely envelopes the armature, the rotor being a closed assembly constituted by two parts of which one part is a magnetic bell to which is fixed an interchangeable pulley and in which are mounted magnets and polarized masses and the other part comprises a well which closes the open extremity of the bell, the bell and wall also comprising hubs which receive bearings carried on the shaft.

The specific novel features of the improved alternator will be understood from the ensuing description referring to various forms of embodiment given by way of non restrictive examples in the accompanying drawings, in which:—

Fig. 1 is a view in axial section showing an improved alternator according to the invention,

Figs. 2, 3, 4 and 5 illustrate modified suspension structures for such an alternator.

In the embodiment of Fig. 1, there is

shown at 1 a magnetic bell within which is an annular retainer member 2 which supports permanent magnets 3 and polarized masses 4. At their other ends the magnets and polarized masses are retained in the bell 1 by a washer 5. The transverse end wall of the bell is formed with a central aperture in which is inserted a driving hub 6 having an annular flange 6a applied against the inner face of said transverse wall and retained in position by rivets 7.

The drive hub 6 is formed with a shoulder 6b against which an interchangeable pulley 8 is supported, the latter having a flange 8a secured to the bell and hub by screws 9. The hub carries a ball bearing 10 through which the shaft 11 of the alternator extends. The outer ball race is clamped between a wall in hub 6 and a flange 12 which is applied by screws against the hub 6. The inner ball race of the bearing is clamped between a shoulder on shaft 11 and one end of a spacer tube 13 co-axial with the shaft, the spacer tube 13 in turn being engaged by a clamping nut 14 screwed onto the end of the shaft. Felt seals 15 are interposed between the hub 6 and spacer tube 13.

At its opposite end the bell is closed by a transverse wall 16 which fits in the end of the bell 1 and is secured thereto by screws 17. In the axial opening of wall 16 a recess is formed in which is housed a ball bearing 18 the inner ball race of which rests on the shaft 11. A felt seal 19 is interposed between the axial opening of the wall 16 and the shaft 11.

The outer part of the alternator just described constitutes the rotor which is centered around the shaft 11. Openings 20 and 21 are desirably provided for the ingress and discharge of air for cooling the alternator as a whole.

The armature mounted on shaft 11 which

[Price

is stationary, includes a magnetic core 22 on which a winding 23 is wound. The conductors 24 connecting the winding to a load circuit extend through a side opening formed in shaft 11 and out thereof through an axial opening.

The projecting ends 11a and 11b of the stationary alternator shaft are supported in bearing boxes 27 and 28 each formed of two complementary parts of a support 29 having bracket-like extensions 29a, 29b and 29c formed with bores (not shown) for pinning them to a supporting arm (not shown). The support 29 may be rigidly mounted on the arm or alternatively it may be mounted for rocking movement, in which case the alternator would be suspended by the action of a belt (not shown) passed around the groove of the pulley.

The type of supporting structure just described might be replaced by any of the modified forms shown in Figs. 2 to 5.

In Fig. 2, the alternator shaft only projects from one end and is retained in a support 30 which is formed of two symmetrical parts clamped against each other at the axial part 31 forming the bearing boxes. The support 30 is so shaped that the pulley is received within the socket formed by the two parts of the support.

In Fig. 3 the alternator support is provided by two parts 32 and 33 one end of each of which forms a bearing boss while the other forms an attachment lug for securing the part to the base 34 by means of an anchor bolt 35 extending therethrough.

In Fig. 4 both bearing bosses are cast integrally with a base stand 36.

In the example of Fig. 5 the ends of shaft 11 are formed with bores into which bent ends 37a and 38a of rods 37 and 38 are

introduced, the upper ends 37b and 38b of rods 37 and 38 being suspended from a wall or partition 39.

WHAT WE CLAIM IS:—

1. An alternator which comprises a fixed shaft supported by at least one of its extremities, a fixed armature on the shaft, and an external rotor which entirely envelopes the armature, the rotor being a closed assembly constituted by two parts of which one part is a magnetic bell to which is fixed an interchangeable pulley and in which are mounted magnets and polarized masses and the other part comprises a wall which closes the open extremity of the bell, the bell and wall also comprising hubs which receive bearings carried on the shaft.

2. An alternator according to Claim 1, wherein the bell has a cylindrical wall having an axial length longer than the wall forming the other part.

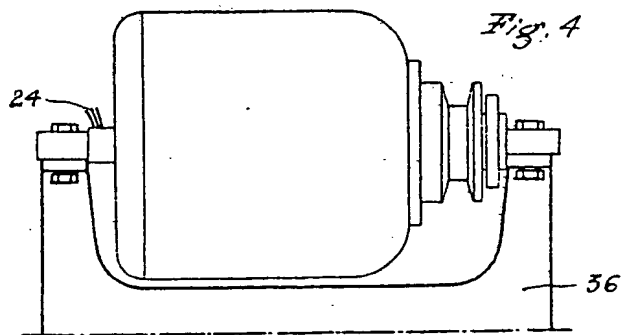
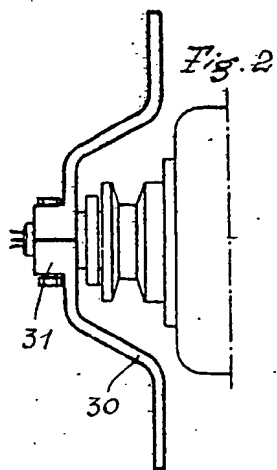
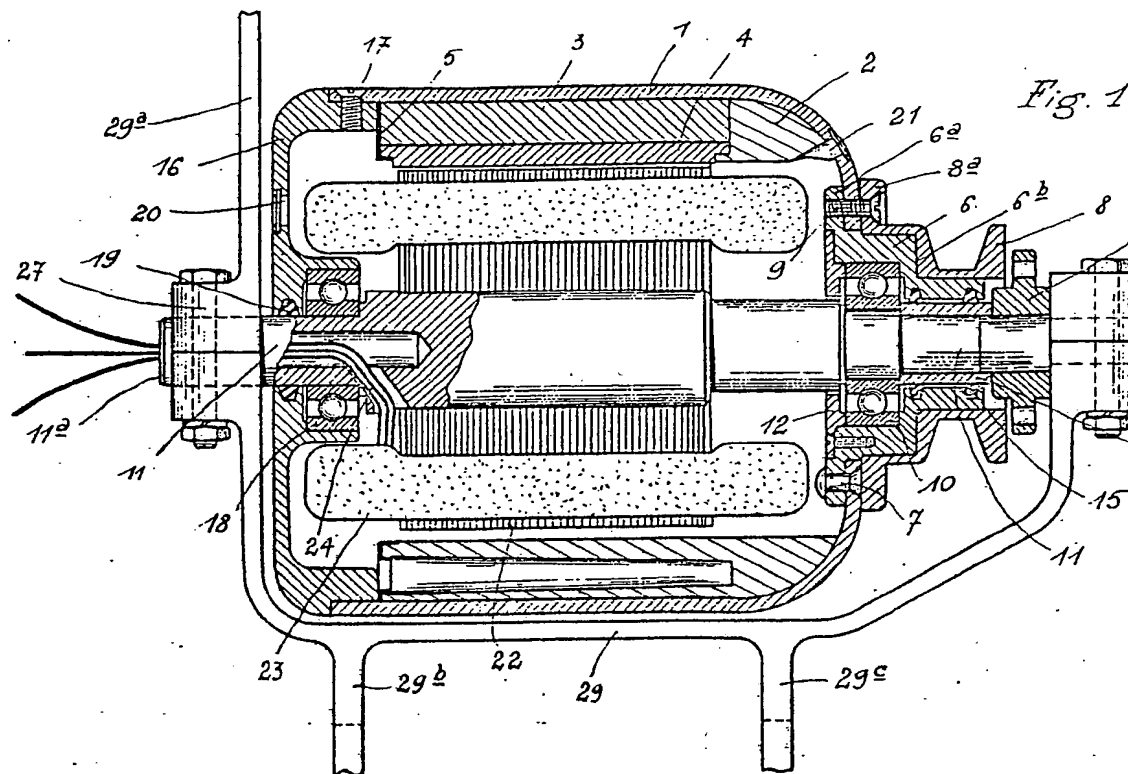
3. An alternator according to Claim 1, wherein the magnetic bell and the closing wall have openings for the circulation of cooling air.

4. An alternator according to Claim 1, wherein the extremities of the fixed shaft are carried in a fixed support.

5. An alternator according to Claim 1, wherein the extremities of the fixed shaft are carried in a rockable support.

6. An alternator substantially as described with reference to the accompanying drawings.

Agents for the Applicants:
STANLEY, POPPLEWELL, FRANCIS
& ROSS,
Chartered Patent Agents,
Cursitor House,
9, 10 & 11, Cursitor Street,
Chancery Lane, London, E.C.4.



37 $\frac{1}{2}$

37

890293

COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of
the Original on a reduced scale

